

Application No.: 10/715,744
Response Dated: April 19, 2007
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MAT-8484US

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1. (Currently Amended) An alkaline storage battery comprising:

a cylindrical metal case, said cylindrical metal case having a bottom;

a positive plate having a protrusion projecting out of said positive ~~electrode~~ plate;

a negative plate having a further protrusion projecting out of said negative plate;

a separator having insulating properties;

an upper metal current collector for collecting current from a positive electrode side;

a bottom metal current collector for collecting current from a negative electrode side;

an electrolyte; and

a sealing plate made of a metal with a hole formed at the center;

wherein:

an electrode group is formed by spirally winding said positive plate and said negative plate with said separator interposed between them, said protrusion of said positive plate and said protrusion of said negative plate facing mutually opposite directions;

said electrode group is housed in said metal case after joining said protrusion of said negative plate with said bottom metal current collector, and said bottom metal current collector and ~~a~~ said bottom of said metal case are joined;

said protrusion of said positive plate is joined with the bottom surface of said upper metal current collector;

a terminal of said upper metal current collector is disposed through said hole in the center of said sealing plate, said upper metal current collector and said sealing plate are joined; and

a periphery of said sealing plate is hermetically sealed with a gasket at an upper opening of said metal case.

2. (Original) The alkaline storage battery of claim 1 wherein said positive plate contains a nickel compound, said negative plate contains a hydrogen absorbing alloy, and said electrolyte is an alkaline electrolyte.

3. (Previously Presented) The alkaline storage battery of claim 1 wherein said upper metal current collector is provided with a gas venting mechanism.

4. (Previously Presented) The alkaline storage battery of claim 1 wherein a resilient vent member is provided inside said terminal of said upper metal current collector.

5. (Currently Amended) The alkaline storage battery of claim 3 wherein said gas venting mechanism of said upper metal current collector having said terminal includes incisions made in two to four directions from the periphery toward the center of said upper metal current collector and a resilient vent member located inside said terminal.

6. (Previously Presented) The alkaline storage battery of claim 1 wherein said sealing plate is annular in shape having said hole in the center with a size at least equal to the size of said terminal of said upper metal current collector, and said terminal of said upper metal current collector passes through said hole to become a terminal for the positive electrode side.

7. (Previously Presented) The alkaline storage battery of claim 6 wherein asphalt is coated in a gap between said upper metal current collector and said annular sealing plate when joining said upper metal current collector and said sealing plate.

8. (Original) The alkaline storage battery of claim 1 wherein the diameter of said metal current collector having said cap-shaped terminal is in the range $1/5$ to $4/5$ of the outer diameter of said metal case.

9. (Withdrawn) A method for manufacturing an alkaline storage battery the method comprising the steps of:

forming an electrode group by disposing a positive plate having a protrusion made by projecting out one side edge along the longitudinal direction of said positive electrode and a negative plate having a protrusion made by projecting out one side edge along the longitudinal direction of said negative plate in a manner such that said protrusion of said positive plate and said protrusion of said negative plate face mutually opposite directions, and spirally winding said positive plate and said negative plate with an insulating separator interposed, and fixing said electrode group by winding outer periphery thereof with a tape;

housing said electrode group into a cylindrical metal case one end of which being circular and closed and the other end being open after joining said protrusion of said negative plate and a bottom metal current collector for collecting current for the negative electrode side;

joining said bottom metal current collector joined to said protrusion of said negative plate of said electrode group and the bottom of said metal case;

joining said protrusion of said positive plate of said electrode group and an upper metal current collector having a cap-shaped terminal for collecting current for the positive electrode side; disposing said cap-shaped terminal of said upper metal current collector to which said protrusion of said positive plate has been joined through a sealing plate made of a metal having a hole and joining from above;

pouring a predetermined quantity of an electrolyte from above said electrode group; and hermetically sealing the periphery of said sealing plate made of a metal with a gasket at the upper opening of said metal case.

10. (Withdrawn) The method for manufacturing an alkaline storage battery of claim 9 wherein,

when joining said bottom metal current collector and the bottom of said metal case, said bottom metal current collector welded to said protrusion of said negative plate and the bottom of said metal case are joined by inserting a welding rod through a hollow space in the center of said electrode group left by removing a mandrel after said electrode group has been wound.